ROAD EVOLUTION IN MALAYSIA: FROM FOOTPATHS TO SUPERHIGHWAYS

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ABSTRACT

Road has become the most important mode of transportation ever since. Now, with total population of 26 million and the growing number of registered vehicles, it is the country's major task to prepare a comfortable and safe road network. Continuous efforts have placed Malaysia's road facilities at par with other developed nations. As more and more areas rich in tin were found and vast fertile land opened for cultivation, they had kindled the interest of investors to the country. Changes in the political scenario have affected social and economical life of the community. This paper covers the development and historical aspects of the evolution of road transport systems in Malaysia over the past century starting from the use of early transportation modes such as wooden carved boats and bullock carts to the construction of sophisticated superhighways which are boosted by various national policies.

1. INTRODUCTION

Malaysia consists of two geographical regions divided by the South China Sea, namely Peninsular Malaysia and East Malaysia (Sabah and Sarawak). The two distinct parts of Malaysia share a largely similar landscape in both feature, coastal plains rising to often densely forested hills and mountains.

With about 329,758 km^2 of total land area, Malaysia has a population of 26 million. The country's population growth is forecast at 2.14% per annum for the period 2001-2020.

The per capita gross national income is about US$4,200 in 2004. The gross domestic product grew at an average annual rate of 6.4% over the period 1991-2003 and an overall target of 6.5% is considered attainable for the period 2001-2020. This much attained growth is attributed by the transportation infrastructure system provided by the government which accelerates growth and economy.

The major mode of transportation in Malaysia is predominantly by road which is influenced by its geographical aspects. The annual number of passengers transported by private cars and buses in 2003 is 1,836 million and 850 million

persons, respectively. The share of road transport of passengers comprises 64.8% by private car and 30.0% by bus, as compared to 4.7% by rail transport and 0.5% by air transport. The road transport also moved 303 million tonnes of goods or an overwhelming 96.4% of total freight in 2003.

Photo 1 – Malaysia which consists of Peninsular and East Malaysia located in the middle of South East Asia.

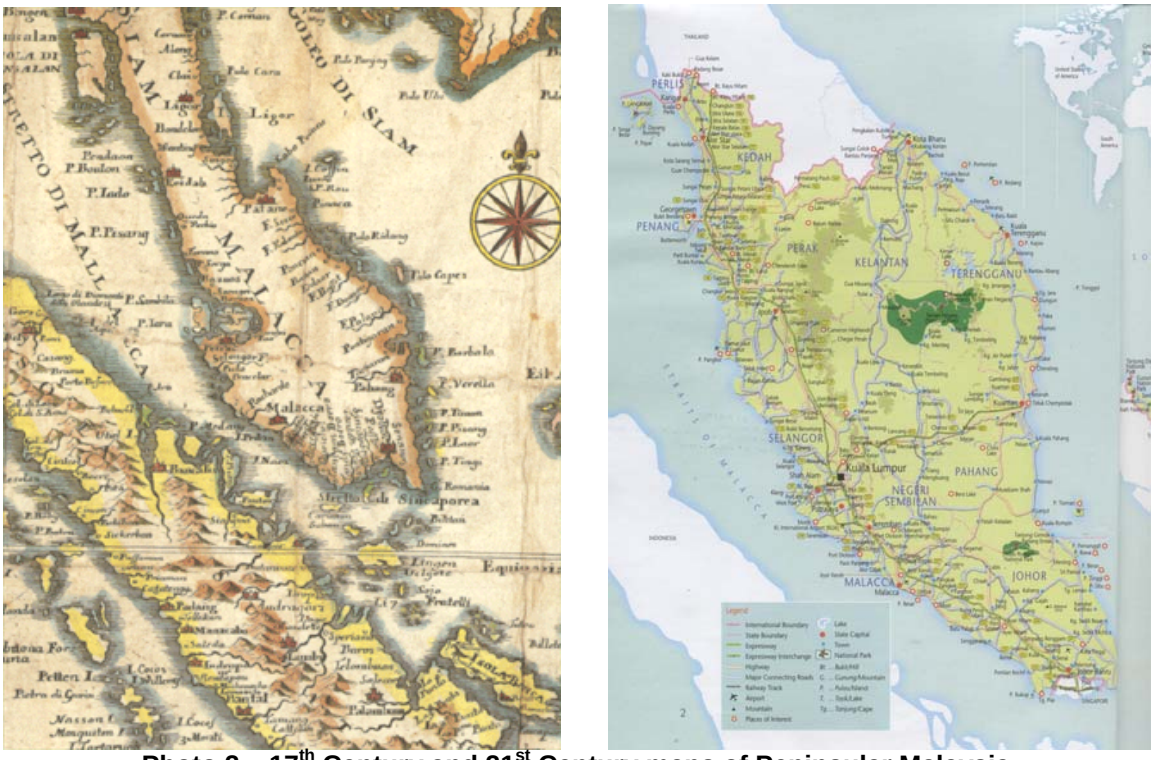

Photo 2 – 17th Century and 21st Century maps of Peninsular Malaysia.

2. MALAYSIAN TRANSPORTATION SYSTEM IN THE EARLY DAYS

2.1 Malay Archipelago as the Trade Centre

Malaya, the Malay Archipelago in Southeast Asia has been a centre of trade for centuries. Various items such as porcelain and spice were actively traded even before Malacca and Singapore rose to prominence. The Malay Archipelago then became the main route for the traders between east and west.

The Arab merchants were actively trading as well as spreading Islam. When Malacca was discovered, they came to Malacca for trade and at the same time, the Persians came to Malacca to acquire their daily sundries. The Arabs complained to the Persians about the trials and tribulations of trading in Siam because of the arduous journey through the Straits of Malacca, onto the Straits of Tebrau before they could continue the voyage through the South China Sea towards Siam as their destination. This voyage which took weeks was found to be extremely lengthy and difficult. The Persians revealed that there was a short cut to avoid such arduous voyage.

Learning of this, the Arabs endeavoured to try out this route. Firstly, they sailed from Malacca along the Muar River to reach Jempol River, where they had to pull the boats on shore for a short distance to get into the River Serting. They then continued their journey along the Bera River to arrive at Kuala Tahan from which they proceeded to the South China Sea and finally to their destination in Siam. The Arabs discovered that even though they had to go on land for a part of the journey, it was very much shorter. So from that day onwards, they decided to use this route, and from thence this route which was known as *Jalan Penarikan* became popular.

As history goes, the route is named *Penarikan*, which is the Malay word for “pulling”. At *Jalan Penarikan*, the locals’ would be required to pull the boats overland for a distance of about 300 meters.

Jalan Penarikan could have been discovered in the 14th century, way before the days of the Malacca Empire. It had been used by locals whereby goods changed hands at this point. This means boats from Pahang with the produce they brought, stopped at a trading centre, transact and pick up goods that are eastward bound and return back to Pahang. Similarly, boats from Muar, bringing goods from Malacca and Singapore were brought to *Jalan Penarikan*, where tradings occurred.

In the days of yesteryears, Pahang River and Muar River were nearly connected at a place called Jempol, in Negeri Sembilan. This was because the Serting River flows into the Bera River, a tributary of the Pahang River. Jempol River then flows into Muar River. Trading boats from River Muar would continue their

journey until they reach Kuala Pahang in Pekan, or Kuala Lipis and continue into Terengganu, Kelantan or Perak.

A Portuguese officer in 1613 wrote that it took him six days by boat from the River Muar to the Pekan, in Pahang. A map produced in 1598 showed that the Muar River and the Pahang River was connected at a place which is now called Serting, in Jempol Negeri Sembilan. The Pahang River - Muar River route was the safer route to the South China Sea or to the Straits of Malacca, because there were no disturbances and threats of piracy that reign the seas. The banks of Pahang River was settled as early as 1400 by warriors and seafarers from around the Malay Archipelago such as Aceh, Riau, Palembang and Sulawesi, forming settlements.

Photo 3 – Temporary bridge through swamp before Siamese military dig a big canal measuring 30 feet by 20 feet in depth to connect the two rivers, Jempol and Serting River.

2.2 Economic Development Leads for Better Transportation System

Before the Malay States came under British administration, they were backward and underdeveloped. There was no proper system of inland transport that linked between states. During this period, roads were naturally built by traders and travellers who walked through jungle path. As trading goods for each traders increased in quantities and sizes, animal such as bulls, horses and elephants were widely used. The introduction of bullock-carts has lead to the construction of roads which were without any well organised development plan.

In the 19th century, tin were found in several Malay States. Later, as the British started to take over as administrators of Malaya, rubber and palm oil trees were

introduced for commercial purposes. After 1900, rubber plantations brought great prosperity to the country and its people. Over time, Malaya became the world's largest major producer of tin, rubber, and palm oil. These three commodities, along with other raw materials, firmly set Malaya's economic tempo well into the mid-20th century. The revenue from tin, rubber and other products provided the government with allocation to build roads, bridges, railways and other infrastructures.

Photo 4 – Winding and bending road laid out for bullock-cart in order to consider the problem of animal traction and the importance of gradient.

In order to transport the economic revenue especially tin and rubber to ports for exports, the British needed a fast and reliable transportation and communication systems. In the first phase (1885-1896), short distance railway has been constructed to connect to tin mines and ports. Railways which have been constructed during that phase were from Taiping to Port Weld (Kuala Sepetang), Kuala Lumpur to Port Swettenham (Port Klang), Seremban to Port Dickson and Ipoh/Batu Gajah to Teluk Anson (Teluk Intan).

By 1931, the British have managed to construct railways to connect most of Malay States from north to south and east to south. There were railways from Padang Besar (North) to Singapore (South) via Gemas and from Kota Bharu (East) to Gemas. Railway has been used as public transport besides for the purpose of economic boosters.

Photo 5 – Port Weld Railway Station in 1885. (Source : Khoo Kay Kim, Prof. *Taiping Ibukota Perak. Persatuan Muzium Malaysia*. 1981.)

2.3 Development of Roads

The earliest roads in Malaysia were built primarily in order to enable them to transport goods and commodities i.e. to provide transportation between the tin mines and rubber plantation areas and the railway stations as well as ports, and to serve urban areas, as well as government and business centres. As more and more mines and plantation areas opened, length of roads increased significantly.

Most of the federal roads in Peninsular Malaysia were built during the British colonial era before 1957. In Sabah, most of the federal roads were built during the occupation of British North Borneo under North Borneo Chartered Company administration. However, in Sarawak, no road network system was developed during the rule of White Rajah Brooke dynasty. As a result, right after Sarawak joined the Federation of Malaysia in 16 September 1963, the federal government of Malaysia began to built a road network system connecting Sarawak to Sabah, known as Pan Borneo Highway.

Before 1880, there were no roads formally constructed until the construction of the great road, built by local labour form Alor Star to Singora frontier recorded in 1880. The road crosses the Padang Terap River at Kepala Batas, at the eighth mile, and thence continued in an absolutely unbroken straight line due north. The road was on an average 24 feet wide, and not metalled. In dry weather, the road had an excellent surface of hard laterite earth. However, it was hardly fit for wheeled traffic such as bullock-cart in wet weather.

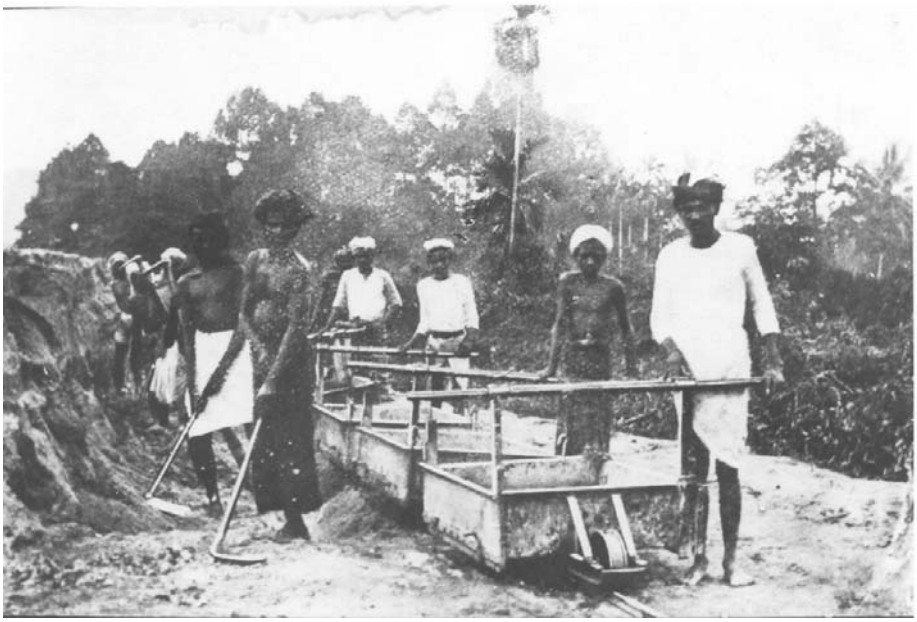

Photo 6 – Construction of unsealed road by local labour using only simple tools.

From that onwards, numerous cart-tracks were opened and improved in outlying districts. With the completion of Kuala Kangsar - Tanjung Malim road in 1887, a cart track was linked from Sungei Ujong to Butterworth. It was possible to make a journey of 365 miles by road from Malacca to Butterworth although the roads were not continuously constructed. In 1896, formation of the Federated Malay States of Malaya was established in Kuala Lumpur. With the formation of Federated Malay States, there were a total of 300 km of road.

Photo 7 – Unsealed road performed well during dry weather but was hardly used by wheeled traffic especially bullock-cart in wet weather.

Many of principle buildings in most districts have been constructed by 1890s. Among the buildings were police stations, hospitals, quarters, rest houses, court houses, barracks, marine bases and other government offices. These developments have contributed to the improvement of roads within towns and cities.

The first section of the great Pahang trunk road was completed from Kuala Kubu to Kuala Lipis in 1898. It was the most difficult and expensive road works attempted in Peninsular Malaysia at that time as most of the construction pass through mountainous terrain. This was the first time Kuala Lipis had land connection with western states via proper road.

Late 1904, the volume of traffic across the straits between Johor Bahru and Singapore became so great and could not be managed using ferry boats and pulling bridge. There was suggestion to build a bridge between Johor Bahru and Singapore. After consideration of few alternatives, it was suggested that a rubble causeway should be built instead of passable bridge. The commencement of Johore Straits Causeway only started 15 years later.

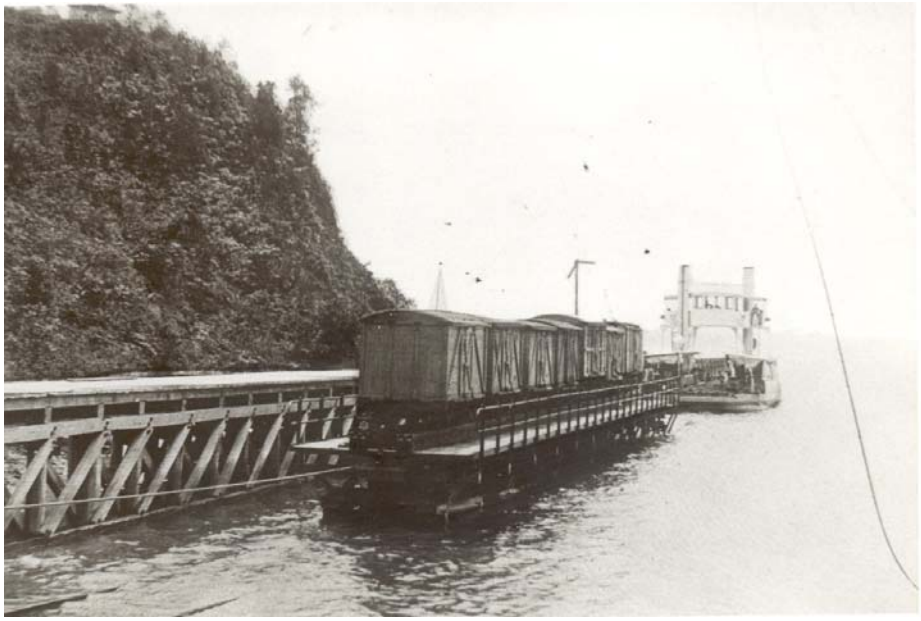

Photo 8 – Ferry boat used at Johore Straits before Johore Straits Causeway was constructed.

After 1910, new methods of road construction were tried and experiments in the use of tar macadam and other bituminous compounds were carried out in Taiping, Kuala Lumpur, Seremban and Malacca. This was because no engineers in those days had any experience in the technique of bituminous treating road surface, or of the bituminous materials themselves. There had to be experiments and it began in the Kinta (Gopeng-Kampar Road). There were considerable

difficulties. None of the technical staff or labour had any idea of the process. Neither did the engineers who, therefore, had to learn first and then teach the overseers.

Right after that, many roads started to be sealed with asphalt and roads constructed in east coast region of Malay States have increased rapidly. By 1919, the use of cars and lorries have developed rapidly, far more quickly than the engineers responsible for upkeep of the roads could cope with.

In 1926, the question of road improvement was taken up as a result of the introduction of the motor car. Elements such as road widening, deviations to avoid sharp corners, permanent bridges, and surface renewals were carried out. The standard for the country road is 6 feet metalled surface laid over 22 feet foundation between drains, no gradient exceeding 1 in 40 except in mountainous districts and corners to permit a view of a few chains ahead. All roads are marked with mile, half mile and quarter mile. Chinese labour is used mostly in construction and Indian labour in maintenance.

Outcrop of metal suitable for road-marking occur at frequent intervals throughout the Peninsular, with the exception of the coast district. Granite and limestone are generally used on main roads. There is also laterite, which is used mainly in agricultural districts and on the coast when obtainable. It provides an ideal surface for light traffic and also restful to the eye. To guard against accidents at night, by reason of this darkening of surface, white posts are placed at each side of the roads. All these considerations have significantly become part of general requirements in modern roads construction.

With the completion of metalled Kendong-Malacca-West Coast Road, Temerloh-Maran Road and Kuantan-Kota Bharu Road in 1956, there were three trunk roads throughout Peninsular Malaysia. Route I laid from Singapore in the south through the west coast to Padang Besar in the north while Route III expanded from Kuantan up to Kota Bharu through the east coast. Route II was completed from Port Swettenham connecting Route I with Route III in Kuantan.

The development of road network in Malaysia had entered to the brighter phases after Malaya gained its independence from British administration in 1957. By 1970s, the road system in the country had been substantially increased and improved. The total length of Federal Roads was 13,505 miles in that year.

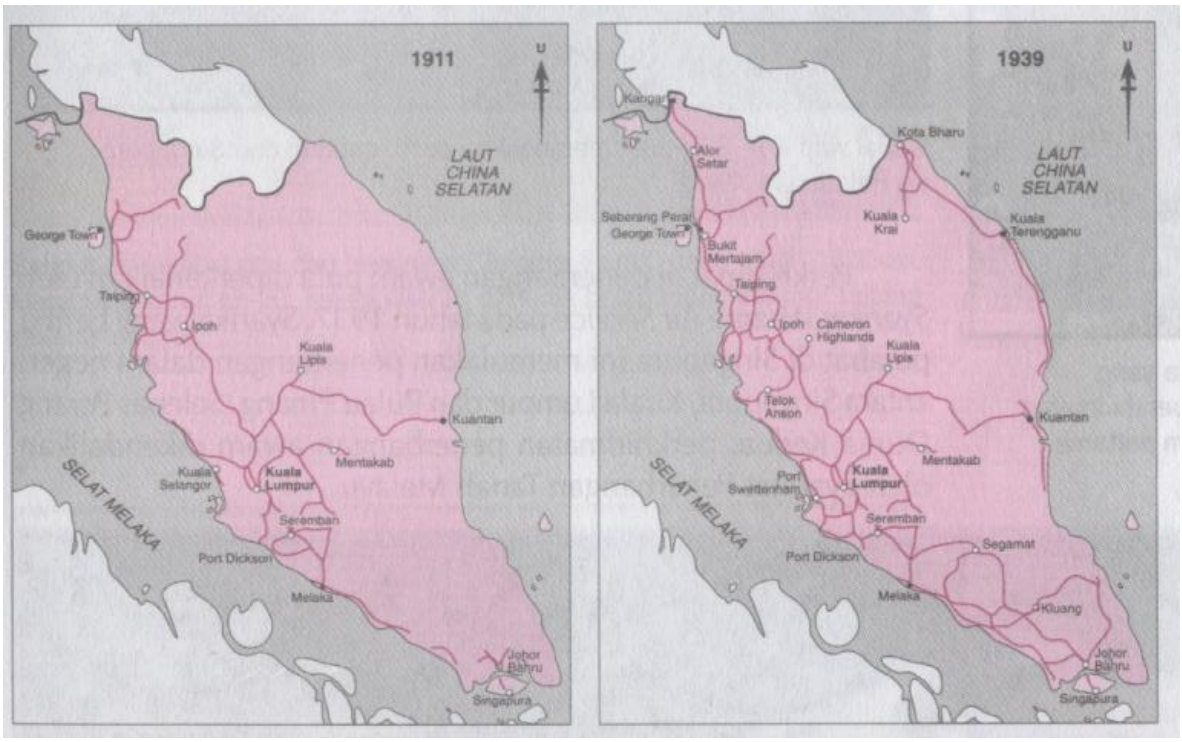

Photo 9 – Development of road networks in Malay States before World War II.

3. GOVERNMENT COMMITMENT TOWARDS THE DEVELOPMENT OF ROAD NETWORK (THE WAY FORWARD)

The development of road network in Malaysia was indirectly initiated and supported by various national policies.

3.1 5-Year National Development Plan

After the formation of Malaysia in 1963, subsequent 5-year national development plans incorporated road development as one of the important elements for the overall economic and social development of the country. Figure 1 depicts the growth in the expenditure on road development plans under each consecutive 5-year Malaysia Plan which was formulated from 1966 to 2005.

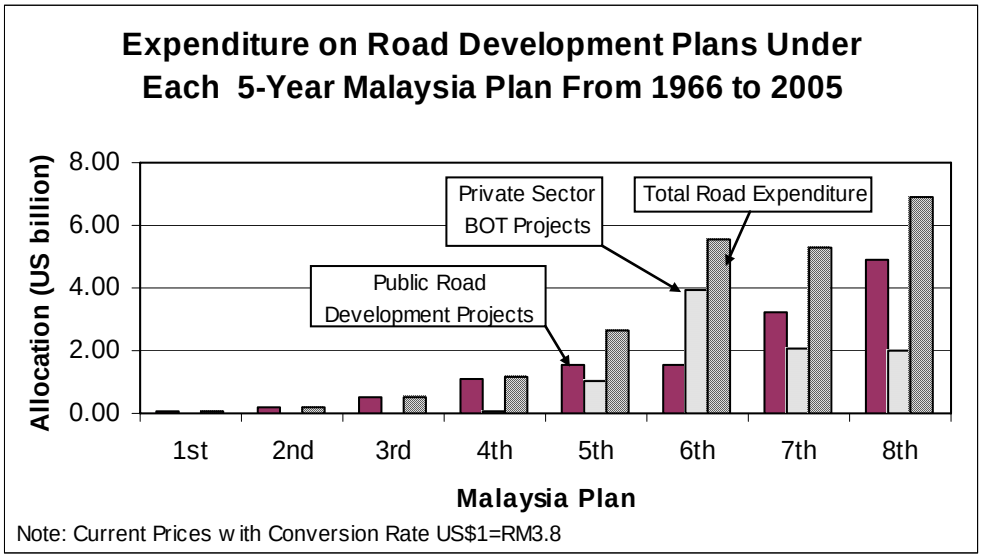

Figure 1 – Expenditure on Road Development Plans in Malaysia, 1966-2005

The major milestones for road development in Malaysia achieved under each Malaysia Plan are summarised in Appendix I.

3.2 New Economic Policy

With the introduction of the New Economic Policy (NEP) in 1970, massive investment in road infrastructure had been made to provide better road transportation system throughout the country. Among others, road projects in the rural and under-developed regions were given priority so as to accelerate the development of those potential regions. The total road network had increased from some 16,000km in 1970 to 54,000km in 1990.

3.3 National Policy on Privatization

In 1983 the Government initiated the privatization as a national policy as a new approach in national development. Development of toll highways has been given a tremendous boost during the last fourteen years largely due to this policy. The first privatized road project took off in 1984 (North – Klang Straits By –pass) during the Fourth Malaysia Plan. To date there has been 25 privatized toll highway concessions.

3.4 National Development Policy

In 1990, the National Development Policy which replaced the NEP, a different function of roads, that is, inter-urban linkages and alleviation of transport related problems had been emphasized in accordance with the rapid urbanization of major towns. In this context, improving of the existing roads and construction of

ring roads in the urban centres had been proceeded in addition to new road construction. Thus, at the turn into the 21st Century and after 7 consecutive Malaysia Plans, the total road network had increased to some 66,500km.

Photo 10 – Superhighways of today.

4. MALAYSIAN HIGHWAY NETWORK DEVELOPMENT PLAN (HNDP)

The Highway Network Development Plan (HNDP) Study covering the Peninsular Malaysia, Sabah and Sarawak was completed in 1993. The HNDP Study then identified 72 projects in the Peninsular Malaysia for implementation up till 2010. To date, approximately 36% of the road plans were implemented with some partial completion due to the repackaging of some projects into smaller ones.

Four strategies have been identified for the highway network development in Peninsular Malaysia (Figure 2) namely:

a) To rationalise and strengthen the East Coast and the West Coast Networks

The development of road network in both the east coast and the west coast is to sustain the regional economic expansion in order to achieve the target set forth in the Country and the State Economic Development Plans.

The strengthening of the road network in the East Coast Corridor includes improving linkages to support the East Coast Highway (Phase 2 is under construction) and the upgrading and widening of Federal Routes 3 and 8 to provide alternative routes for traffic during monsoon season. The East Coast Corridor highway development projects include the improvement of coastal road from Kelantan in the north to Johor in the south.

The existing road network in the West Coast Corridor shall be further strengthened and expanded to meet the traffic demand in future by providing a high level of service and enhanced reliability. The development of a new

coastal expressway, ring roads and by-passes will be effective in dispersing traffic by relieving through traffic from entering the congested urban centres.

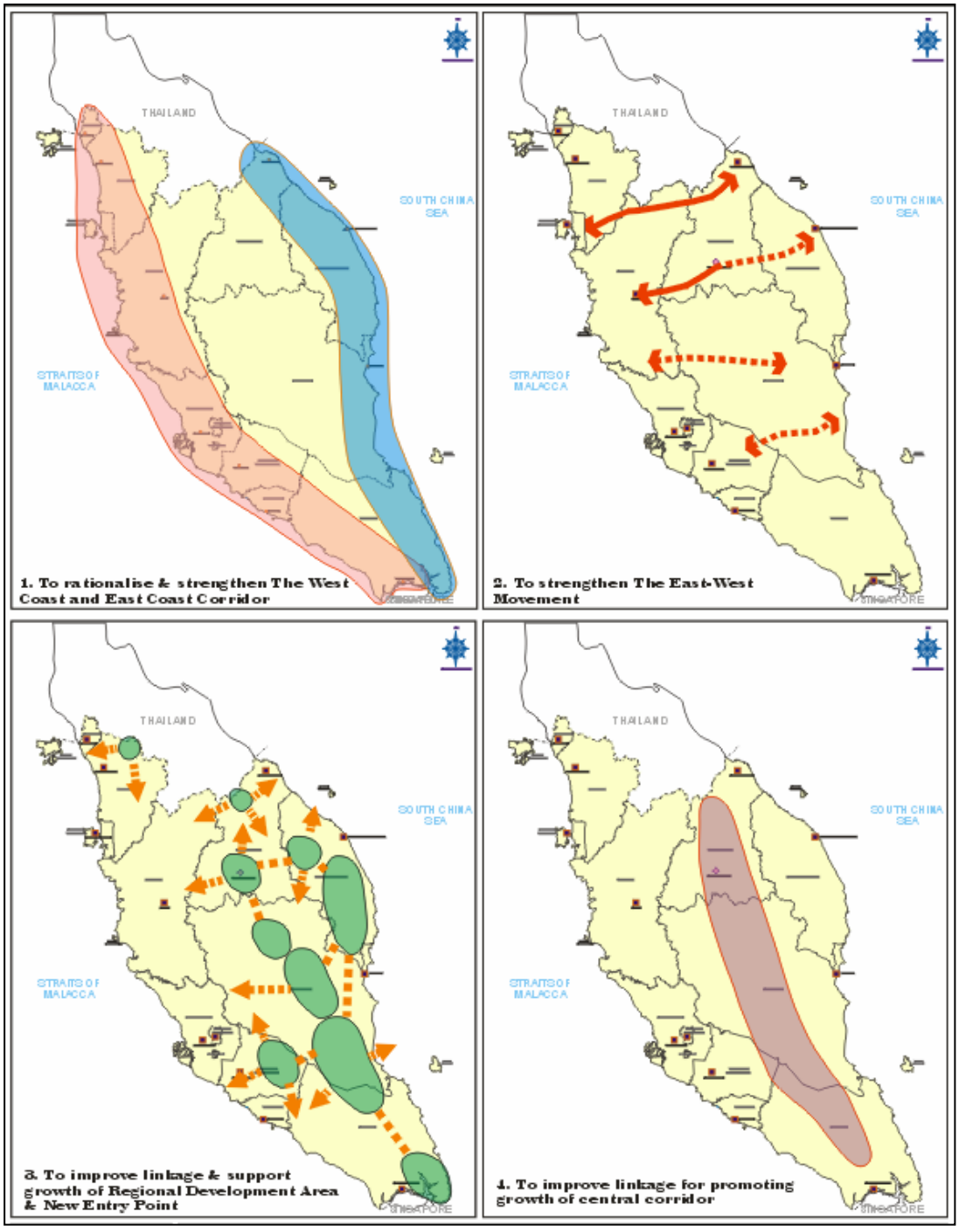

Figure 2 – National highway development strategies in Peninsular Malaysia

b) To strengthening the east-west movement

The provision of new linkages for the East-West movement would enhance the development of smaller growth centres. Additional links for the east-west movement will also provide alternative routes for traffic during major road mishaps along the existing roads.

c) To improve linkages and support growth of regional development area and new entry points

Accessibility to the regional land development schemes located in the Central, Eastern and Southern Development Corridors has to be further improved by linking planned growth centres in the land development schemes to the established regional and administrative centres.

Improved linkages would also be provided to new entry points in the north and south to enhance cooperation of border economic activities.

d) To improve linkage for promoting growth of the Central Corridor

The improvement to the road network in the Central Corridor will provide a definitive and clear road network hierarchy for improving accessibility to eco-tourism centers and other planned agro-forestry based development schemes.

5. CONCLUSION

Engineers of the past were often criticised for building roads with winding and bending curves, but if one had a full understanding of the background history where the problem of animal traction and the gradient which those engineers were confronted with, which they solved so remarkably well, one should pay a very hearty tribute to their skills and perseverance.

The expansion of the road network in Malaysia has always been supply driven and evaluated by balancing the social obligation against economic returns, rather than on a demand driven basis. The supply driven road development plan has attracted a high cost of investment. The Government now faces the challenge to ensure better quality investments and improve the methodologies for project selection and implementation.

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APPENDIX I

Table 1 – Major milestones for road development in Malaysia

National Planning/Policy		Major Milestones for Road Development Under 5-Year Plan
Formation of Malaysia in 1963	1st Malaysia Plan (1966-1970)	• First Traffic Survey (1967) and General Transport Survey (1968) conducted • RM309 million was spent on Federal Roads
Outline Perspective Plan 1 (1971-1990) based on New Economic Policy	2nd Malaysia Plan (1971-1975)	• Highway Maintenance Study, 1974 • RM771 million was spent on road development plans
	3rd Malaysia Plan (1976-1980)	• Accelerated Rural Roads Program • RM1.9 billion was spent on road development plans
	4th Malaysia Plan (1981-1985)	• National Policy on Privatisation, 1983 • Federal Road (Private Management) Act (1984) was enacted • Construction began on interurban toll highway from north to south. • RM4.2 billion was spent on road development plans
	5th Malaysia Plan (1986-1990)	• Road Traffic Ordinance (1958) was revamped as Road Transport Act (1987) • National Axle Load Study • RM6 billion was spent on road development plans
Outline Perspective Plan 2 (1991-2000) based on National Development Policy	6th Malaysia Plan (1991-1995)	• Highway Network Development Plan Study completed in 1993 • North-South Expressway was open to traffic in 1994 • Investment of RM15 billion by the private sector in BOT Toll • Some RM6 billion spent on the public road development plans.
	7th Malaysia Plan (1996-2000)	• Fast track implementation processes and accelerated privatisation of projects to revive and stimulate the economy. • 9 BOT projects were completed and 7 more under construction. • Introduced Deferred Payment Scheme to finance road upgrading projects by the private sector. • Private sector expended RM7.9 billion on BOT highways while RM12.3 billion was spent on public road development plans.
Outline Perspective Plan 3 (2001-2010) based on National Vision Policy	8th Malaysia Plan (2001-2005)	• Accelerated implementation of projects with emphasis on improving accessibility to less developed, recreational and potential economic growth areas. • Review of Highway Development Plan Study • Private sector to expend RM7.6 billion on BOT highways while RM18.6 billion is allocated on public road development plans.